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ABSTRACT

With the resurgence of interest in sex differences research, it is important to use a "confidence interval" strategy in organizing and interpreting material rather than a strategy of statistical significance or non-significance. Investigators are urged to go beyond the reporting of statistical significance and to determine something about an index of experimental effect size. These techniques give an investigator some information about advisability in continuing a given line of investigation. This urging is particularly important in research on sex differences wherein typically large samples are studied and small mean differences prove to be statistically significant at or beyond conventionally accepted levels of probability. A number of local sex group comparisons for various measures of attitudes, interests and values have been reported. Knowing a subject's verbal ability level appears to provide a better prediction of selected attitude than does knowing the subject's sex. (PJC)

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Meaningfulness of MMPI Clinical Scale Sex Differences for Hard Drug
Abusers and for University Counseling Center Clients¹.

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There have been at least two consequences of the publication of Maccoby and Jacklin's (1974) book The Psychology of Sex Differences. First, a number of myths about sex differences have been refuted. In their extensive review of research reports, Maccoby and Jacklin found, for example, no consistent evidence for sex differences in "sociability," "suggestibility," self-esteem, or analytic cognitive style. The second consequence has been a resurgence of interest in sex differences research (e.g. Eagly, 1978). Recently Eagly (1978), in a thorough review of research investigations on sex differences in "influenceability" has come to a conclusion similar to some of those of Maccoby and Jacklin. She concluded that when "all available evidence is considered, the widely accepted idea that there is a sex difference in influenceability consistent across types of influence settings appears to be wrong (Eagly, 1978, p. 105)."

In Block's (1976) review of Maccoby and Jacklin's book, she suggested among other things, that they should have used a "confidence interval" strategy in organizing and interpreting their material rather than a strategy of statistical significance or non-significance. Much the same suggestion is herein made for

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Eagly's review on influenceability. Indeed, had Maccoby and Jacklin and Eagly done so, the prediction would be that very few meaningful sex differences would have been reported.

The essence of the Block suggestion is the urging of investigators to go beyond the reporting of statistical significance and to determine something about what writers (e.g. Cohen, 1969; Hays, 1963) describe as an index of experimental effect size. Techniques for obtaining this type of information include calculation of r^2 (Minium, 1978), d (Cohen, 1969), and the estimate of omega squared $\hat{\omega}^2$ (Hays, 1963). These interrelated techniques give, in Hays' terms, an investigator some information about the advisability of continuing a given line of investigation. This urging is particularly important in sex differences research wherein typically large samples are studied, and small mean differences prove to be statistically significant at or beyond conventionally accepted levels of probability.

A number of local sex group comparisons for various measures of attitudes, interests, personality, and values have been reported. The measures included in these studies are the Rokeach Dogmatism Scale, the Attitudes Toward Women Scale, the Basic Interest Scales of the Strong-Campbell Interest Inventory, the California Psychological Inventory, and the Allport, Vernon, and Lindzey Study of Values. These reports (Plant & Smith, 1978; Plant & Southern, 1979; Plant, Southern, & Jacklin, 1977; Smith & Plant, 1979) are of t ratios and accompanying estimate of omega squared values for obtained statistically significant t ratios. In the main, we have not been impressed with the average magnitude of the $\hat{\omega}^2$ values; that is, generally not much enhanced prediction of attitudes, interests, personality, or values is obtained by knowing a subject's sex.

Indeed, in two local investigations (Garman & Plant, 1975; Potts, Plant, & Southern, 1978) it was concluded that knowing a subject's verbal ability level provides a better prediction of selected attitude and personality test scores than does knowing the subject's sex.

What I want to report now are sex differences in raw score means for nine scales of the MMPI: the Hypochondriasis (Hs), Depression (D), Hysteria (Hy), Psychopathic Deviate (Pd), Paranoia (Pa), Psychasthenia (Pt), Schizophrenia (Sc), Hypomania (Ma), and Social Introversion (Si) Scales. Raw scores were used throughout the analyses for the obvious reason that normalized T scores for each scale are based upon same sex norms. The K score corrections for the Hs, Pd, Pt, Sc, and Ma scales were omitted in the analyses because various writers caution against using the K score corrections in MMPI research (Anastasi, 1976; Butcher & Tellegen, 1978; Cronbach, 1970). For example, Butcher and Tellegen (1978) in an invited paper titled "Common Methodological Problems in MMPI Research," contend that "In research computations more understandable results will often be obtained if one does not use the K correction, but use K as a separate indicator (p. 621)."

The samples studied were: (1) 64 male and 40 female hard drug abusers, tested with the MMPI and other measures (Smithyman, Plant, & Southern, 1974) in a community residential rehabilitation center several days after arrival at the center; (2) 133 male and 130 female counseling clients seen in our University Counseling Center during the 1960's; (3) 103 male and 97 female counseling clients seen in the same Center during the 1970's. The author recorded all data so as to assure confidentiality.

Before calling attention to the data in the handout table, there are three things I should call to your attention:

1. The focus is not upon the mean raw scores of the drug abusers vs. those of the counseling clients.
2. The focus is upon the sex comparisons within the three groups and particularly upon the last two columns in the table headed t
3. and ω^2 values are shown only for those comparisons yielding a statistically significant t ratio at conventionally accepted p levels. Perhaps it would also be helpful to remind you that the ω^2 values give an indication of the proportion of variance in the dependent variable (MMPI Scale score in this instance) accounted for by the independent variable (in this instance, sex). It is still the investigator's decision as to what level of ω^2 might be indicative of a meaningful relationship, but Cohen (1969) has proposed that ω^2 values of .10 and below probably offer little in the way of predictive ability.

The results of the 27 sex group comparisons reported in table 1 of the handout can be summarized in several ways:

1. Eleven of the 27 t ratios were statistically significant beyond conventionally accepted p values; 6 beyond the .05 p level and 5 beyond the .01 p level. Generally speaking, the directions of these significant t ratios were the same for the three sex group comparisons within a given scale. This was notably the case for the Depression and Hysteria Scales on which female samples had significantly higher means than did males, and to a lesser extent on the Hypomania Scale on which males had the higher means.

2. The $11 \frac{\omega^2}{\omega^2 + \epsilon^2}$ values for the statistically significant t ratios ranged from .01 to .11 with a median value of .04. Overall these values are relatively small, and on the average approximately 4% of the variance in these MMPI Scales is accounted for by sex of subjects. Not much prediction improvement of MMPI Scale scores is obtained by knowing a subject's sex.

There are several conclusions to be drawn from these results. First, with the MMPI being the widely used measure that it is, additional analyses of the sort reported here need to be undertaken to determine the generality over diverse samples of the obtained results. In this vein, we are currently conducting the same analyses for the same nine MMPI Scales for:

1. random samples of 100 each men and women University students who were tested in classes in Mental Hygiene during the 1950's, the 1960's, and the 1970's.
2. samples of subjects seeking psychotherapy at our Psychological Clinic.
3. samples of counselees with high or low verbal ability from our counseling center.
4. samples of cross-national subjects from various groups for whom data have been reported in the literature.
5. lastly, I'm on the track of data for men and women sworn peace officers and for men and women chutists, and hope to make similar analyses for these samples.

A second conclusion from the reported results relates to my students' interpretations of statistically significant sex differences on personality measures. Their ready explanation is that such results are strong evidence

of the effects of differential sex role training. Our collective findings of little or no psychological meaningfulness of statistically significant sex differences would seem to make the differential sex role training explanation most tenuous.

The third conclusion relates to the necessity or desirability of separate sex norms for many of our widely used personality measures. Perhaps with further analyses of the sort reported herein and with similar outcomes, too, we will consider moving to person norms for test interpretation rather than to continue using separate sex norms for our test interpretations.

References

- Anastasi, A. Psychological testing (4th ed.). New York: Macmillan, 1976.
- Block, J. H. Debatable conclusions about sex differences. Contemporary Psychology, 1975, 21, 517-522.
- Butcher, J. N., & Tellegen, A. Common methodological problems in MMPI research. Journal of Consulting and Clinical Psychology, 1978, 46, 620-628.
- Cohen, J. Statistical power analysis for the behavioral sciences. New York: Academic Press, 1969.
- Cronbach, L. J. Essentials of psychological testing (3rd ed.). New York: Harper & Row, 1970.
- Eagly, A. H. Sex differences in influenceability. Psychological Bulletin, 1978, 85, 86-116.
- Garman, L. G., & Plant, W. T. Personality, academic performance, and educational aspirations of very bright women and men vs. those of high average intelligence. Journal of Genetic Psychology, 1975, 126, 163-167.
- Hays, W. Statistics for psychologists. New York: Holt, Rinehart, & Winston, 1963.
- Maccoby, E. E., & Jacklin, C. N. The psychology of sex differences. Stanford, CA.: Stanford Univer. Press, 1974.
- Minium, E. W. Statistical reasoning in psychology and education (2nd ed.). New York: John Wiley & Sons, 1978.
- Plant, W. T., & Smith, B. R. Women and men: Are they meaningfully different in vocational interests? Paper presented at the meeting of the Western Psychological Association, San Francisco, April 1978.

- Plant, W. T., & Southern, M. L. Meaningfulness of sex differences in selected interest-values test scores. Paper presented at the meeting of the American Psychological Association, San Francisco, August 1977.
- Plant, W. T., Southern, M. L., & Jacklin, C. N. Statistically significant sex differences in attitude, interest, and personality measures: Much ado about very little! Symposium presented at the meeting of the Western Association for Women in Psychology, San Jose, February 1977.
- Potts, C. J., Plant, W. T., & Southern, M. L. Conventional sex differences in personality: Does sex or verbal ability account for more variance? Psychological Reports, 1978, 43, 931-936.
- Smith, B. R., & Plant, W. T. Sex differences on the Basic Interest Scales of the Strong-Campbell Interest Inventory: Substantative or just statistical? Paper presented at the meeting of the Western Psychological Association, San Diego, April 1979.
- Smithyman, S. D., Plant, W. T., & Southern, M. L. Locus of control in a sample of drug abusers. Psychological Reports, 1974, 34, 1293-1294.

Table 1

Sex Differences on Nine MMPI Clinical Scales For Drug Abusers
and For 1960 and 1970 University Counseling Center Clients

MMPI Scales & Samples	N	$\bar{X}$	σ	N	$\bar{X}$	σ	t	ω^2
<u>Hypochond.</u>								
Drug abusers	64	10.9	6.6	40	13.5	5.7	-2.10*	.03
1960's clients	133	4.5	3.6	130	5.2	3.4	-1.62	
1970's clients	103	4.5	3.6	97	5.4	3.9	-1.64	
<u>Depression</u>								
Drug abusers	64	23.8	6.2	40	27.8	4.9	-3.55**	.10
1960's clients	133	20.6	5.6	130	23.3	5.9	-3.81**	.05
1970's clients	103	20.7	5.7	97	23.0	6.6	-2.68**	.03
<u>Hysteria</u>								
Drug abusers	64	24.0	7.1	40	27.5	5.8	-2.61*	.05
1960's clients	133	22.1	4.3	130	23.3	4.5	-2.05*	.01
1970's clients	103	21.1	4.4	97	23.5	4.2	-3.96**	.07
<u>Psychop. Deviate</u>								
Drug abusers	64	25.5	4.9	40	26.7	5.1	-1.17	
1960's clients	133	17.9	4.7	130	17.6	4.8	.63	
1970's clients	103	18.1	5.3	97	17.6	5.4	.66	
<u>Paranoia</u>								
Drug abusers	64	14.3	4.4	40	15.2	5.0	-.98	
1960's clients	133	10.4	3.1	130	10.7	3.1	-.79	
1970's clients	103	10.5	3.5	97	10.4	3.0	.40	
<u>Psychasth.</u>								
Drug abusers	64	20.7	8.2	40	24.4	8.2	-2.22*	.04
1960's clients	133	14.2	7.9	130	15.7	8.5	-1.48	
1970's clients	103	14.4	9.2	97	14.7	8.1	-.26	

Table 1 - continued

MMPI Scales & Samples	N	$\bar{X}$	σ	N	$\bar{X}$	σ	t	ω^2
<u>Schizophren.</u>								
Drug abusers	64	26.8	12.0	40	30.4	12.0	-1.45	
1960's clients	133	13.6	8.5	130	14.1	9.0	-.48	
1970's clients	103	14.3	9.8	97	13.1	8.2	.95	
<u>Hypomania</u>								
Drug abusers	64	24.5	4.8	40	23.6	4.9	.94	
1960's clients	133	18.2	4.2	130	16.9	4.4	2.41*	.02
1970's clients	103	18.9	4.5	97	17.3	4.2	2.51*	.03
<u>Social Introv.</u>								
Drug abusers	64	40.6	6.8	40	35.9	6.0	3.64**	.11
1960's clients	133	25.8	9.7	130	27.9	10.2	-1.74	
1970's clients	103	27.3	10.3	97	28.3	9.6	-.72	

** $p < .01$, 2-tail test* $p < .05$, 2-tail test